

Ezell Road and Overhead Bridge Road

Chesnee, South Carolina

Bridge Replacement

Project Team Members:

Owner:
Spartanburg County

Engineer:
synTerra

Contractor:
Saddlebrook Construction Inc.
Taylor & Murphy Construction Company

Technical Description:

- Width: 29 -ft., 29 -ft.
- Span: 108 -ft., 104 -ft.
- Style: Cambridge
- Finish: Weathering
- Decking: Concrete

Installation Date: July 2011



The old wooden bridges on both Ezell Road and Overhead Bridge Road in Spartanburg County, South Carolina, were in need of replacement. The load ratings on both bridges had been decreased due to their deficient SD ratings. These single lane structures had served the citizens of Chesnee in Spartanburg County for years while providing safe passage over the CSX track below; however, it was time for replacement.

Aside from the poor SD rating, the bridges, built in 1940, ran perpendicular to the railroad, causing a significant issue with sight lines for those traveling on either road.

Large, long curves were necessary at both ends of the bridge in order to line up with the angle of the crossing. As a result, there had been numerous serious car accidents on the approach roads as well as on the bridge itself. Additionally, due to the short span capabilities of the wooden superstructure, at least three piers were required to bridge the gap over the track. This was not an ideal situation for either CSX or Spartanburg County.

Faced with the deterioration of the single lane wooden bridges and the need to have superstructures that conformed to today-ft.s traffic and load requirements, Spartanburg County called upon synTerra, a consulting engineering firm in Greenville, South Carolina, to handle the projects. synTerra, in turn, contacted U.S. Bridge to assist in providing structures that would meet all design criteria and provide an element of aesthetics.

For the Ezell Road bridge replacement project, a 108-ft. x 29-ft. U.S. Bridge clear span, all-bolted Cambridge style truss bridge design with a self weathering finish and a live load rating of HL93 was chosen. To maintain continuity with the Ezell Bridge project, the county also chose a Cambridge style, self weathering truss bridge design for the Overhead Bridge Road project with a clear span



length of 104-ft. x 29-ft. wide with a load rating of HL93. The roadway railings for both bridges were w-beams and both were also finished with concrete decking.

The bridges were expanded from the original one lane to two full lanes with a shoulder. There was also no need for piers as the U.S. Bridge structures could easily clear span the length required. The Cambridge style truss can clear span up to 200-ft. and the larger, U.S. Bridge Freedom Series Thru Truss can clear span up to 300-ft.. Both bridges had a "track to underside of bridge" clearance that exceeded the minimum requirements.

As safety was of paramount importance for both synTerra and U.S. Bridge, it was recommended that both bridges have a significant skew of 29 degrees LF and 24 degrees RF respectively in order to minimize the requirements for long and dangerous curves on the approach roads. This recommendation significantly improved the sight lines around the bridges, resulting in a reduction in the number of accidents at the site as well as on the approach roads leading to the bridge.

Both projects were made possible through joint participation of Spartanburg County and CSX as well as the availability of C-Funds and CIP Funds.

Significant to the bridge replacement projects, were the cost reductions involved in using pre-fabricated bridge structures. Time of construction was significantly reduced when compared to a prestressed concrete girder or steel plate girder which could take nearly three times longer to construct. Further, since there was a smaller depth of structure with the U.S. Bridge truss versus a girder option, there was no need to elevate the approach roads. As a benefit of the increased speed of installation, the railroad was able to reduce the amount of time and cost required for a flagman during construction. All in all, the county was able to save nearly \$500,000 when compared to other options.

"Everything is going well and everyone is excited about the new bridges," stated Todd Carroll, P.E., CTC Engineering Supervisor from Spartanburg County, SC Public Works Department and Project Manager for both bridge replacements. "The bridges were shown on the news recently and the viewers were told how the new bridges were able to handle the school bus and fire truck loads. By doing this, the fire trucks were able to cut their response time in half instead of having to go through Chesnee to get to the other side of the tracks. Also, the school district is able to save around \$30/day because of shortened bus routes. An article was written in Spartanburg Herald about the bridges as well. From our point of view, the bridges are great. They provided an economical and aesthetically pleasing solution to obtaining adequate clearance over CSXT."

